WHAT IS CLAIMED IS:

Claim 1. A method of performing energy calculations in a power distribution system, said method comprising:

sampling a first voltage at a first module in the power distribution system;

communicating said first voltage from said first module to a central controller;

performing an energy calculation in said central controller based at least in part on said first voltage; and

applying said energy calculation to a second module in the power distribution system.

Claim 2. The method as in claim 1, further comprising:
sampling a second current at said second module;

communicating said second current from said second module to said central controller; and

performing said energy calculation in said central controller using said first voltage and said second current, said second current and said first voltage are for a predetermined time window.

Claim 3. The method as in claim 2, wherein said energy calculation is one selected from the group consisting of watts, watt-hours, varhours, vars, VA hours, VA, and power factor.

Claim 4. The method as in claim 1, further comprising determining a function of the power distribution system based at least in part on said energy calculation.

Claim 5. The method as in claim 4, wherein said function is selected from the group consisting of undervoltage detection, reverse power flow, low power factor, overvoltage, voltage imbalance, voltage relays, and power relays.

Claim 6. The method as in claim 1, further comprising

sampling a third voltage at a third module in the power distribution system;

communicating said third voltage from said third module to said central controller;

controlling said central controller to perform said energy calculation based at least in part on said third voltage instead of said first voltage; and

applying said energy calculation to said second module.

Claim 7. The method as in claim 6, wherein said central controller is controlled to perform said energy calculation based at least in part on said third voltage instead of said first voltage in response to a condition of said power distribution system.

Claim 8. The method as in claim 7, wherein said condition is a switchover from said first module to said third module.

Claim 9. The method as in claim 1, further comprising accessing a sensor identifier resident on said central computer, said sensor identifier identifying a location of said first module.

Claim 10. A power distribution system comprising:

a main breaker for distributing power from a first power source to a power bus;

a first module in communication with said main breaker, said first module sampling a first voltage of said power at said main breaker;

a feeder-breaker for receiving said power from said power bus;

a second module in communication with said feeder-breaker; and

a central computer in communication with said first and second modules over a data network so that said central computer can determine an energy calculation of said second module based at least in part on said first voltage.

Claim 11. The system as in claim 10, wherein said second module comprises only a current sensor.

Claim 12. The system as in claim 10, wherein said second module samples a second current of said power at said feeder-breaker.

Claim 13. The system as in claim 12, wherein said first voltage and said second current are sampled at substantially the same time.

Claim 14. The system as in claim 12, wherein said central computer determine said energy calculation of said second module based at least in part on said first voltage and said second voltage.

Claim 15. The system as in claim 10, further comprising a voltage sensor source identifier resident on said central computer, said central computer determining a source of voltage for said energy calculation based on said voltage sensor source identifier.

Claim 16. A method of performing energy calculations in a power distribution system, said method comprising:

sending a first voltage indicative of a voltage at a first module in the power distribution system to a central computer;

performing an energy calculation in said central controller based at least in part on said first voltage; and

applying said energy calculation to a second module in the power distribution system.

Claim 17. The method as in claim 16, further comprising accessing a sensor identifier resident on said central computer, said sensor identifier identifying a location of said first module.

Claim 18. The method as in claim 17, further comprising sending a second current indicative of a current at said second module to said central computer and performing said energy calculation based at least in part on said first voltage and said second current.

Claim 19. The method as in claim 18, wherein said first voltage and said second current are sampled at substantially the same time.

Claim 20. The method as in claim 16, further comprising:

sending a third voltage indicative of a voltage at a third module in the power distribution system to a central computer;

performing said energy calculation in said central controller based at least in part on said third voltage instead of said first voltage; and

applying said energy calculation to said second module.

Claim 21. The method as in claim 20, wherein said central controller is controlled to perform said energy calculation based at least in part on said third voltage instead of said first voltage in response to a condition of said power distribution system.

Claim 22. The method as in claim 21, wherein said condition is a switchover from said first module to said third module.

Claim 23. A power distribution system comprising:

a first breaker for distributing power from a first power source to a power bus;

a first module in communication with said first breaker, said first module having a first current sensor for generating a first current signal of said power at said first breaker;

a second breaker for receiving said power from said power bus and distributing said power to a load;

a second module in communication with said second breaker, said second module having a second current sensor for generating a second current signal of said power at said second breaker; and

a central computer in communication with said first and second modules over a data network, said central computer having a first polarity parameter so that said central computer can compensate for a polarity of said power flowing through said first breaker to a first selected polarity, and said central computer having a second polarity parameter so that said central computer can compensate for a polarity of said power flowing through said second breaker to a second selected polarity.